

CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture
Organization of
the United Nations



World Health
Organization

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STANDARD FOR QUICK FROZEN BROCCOLI

CXS 110-1981

Adopted in 1981. Amended in 2019.

1. SCOPE

This Standard shall apply to quick frozen broccoli of the species *Brassica oleracea* L. var. *italica* Plenck (Sprouting broccoli), as defined below and offered for direct consumption without further processing, except for re-packing, if required. It does not apply to the product when indicated as intended for further processing or for other industrial purposes.

2. DESCRIPTION

2.1 Product Definition

Quick frozen broccoli is the product prepared from the fresh, clean, sound stalks or shoots of the broccoli plant conforming to the characteristics of the species *Brassica oleracea* L. var. *italica* Plenck (Sprouting Broccoli) which have been sorted, trimmed, washed and sufficiently blanched to ensure adequate stability of colour and flavour during normal marketing cycles.

2.2 Process Definition

2.2.1 Quick frozen broccoli is the product subjected to a freezing process in appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained at a low temperature such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale.

2.2.2 The recognized practice of repacking quick frozen products under controlled conditions is permitted.

2.3 Handling Practice

The product shall be handled under conditions such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. It is recommended that during storage, transportation, distribution and retail, the product be handled in accordance with the provisions in the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CXC 8-1976).

2.4 Presentation

2.4.1 Styles

- (a) **Spears** - the head and adjoining portion of the stem, with or without small tender attached leaves, ranging in length from more than 7 cm to 16 cm. The spears may be split longitudinally. Within each sample unit not more than 20 percent by count fall outside the designated length.
- (b) **Florets** - the head and adjoining portion of the stem with or without small tender attached leaves ranging in length from 3 cm to 7 cm with sufficient attached stem to maintain a compact head. The florets may be split longitudinally. Within each sample unit not more than 20 percent by count fall outside the designated length.
- (c) **Cut spears** - spears of the broccoli plant, which have been cut into portions and which may be irregular in shape. Pieces from 2 cm to 5 cm in the longest dimension. Leaf material may be present but shall not exceed 35 percent m/m and head material shall not be less than 15 percent m/m.
- (d) **Chopped** - Broccoli finely cut into pieces less than 2 cm in the longest dimension. Leaf material may be present but shall not exceed 35 percent m/m and head material shall not be less than 15 percent m/m.

2.4.2 Other Styles

Any other presentation of the product shall be permitted provided that it:

- (a) is sufficiently distinctive from other forms of presentation laid down in this Standard;
- (b) meets all other requirements of this Standard;
- (c) is adequately described on the label to avoid confusing or misleading the consumer.

2.4.3 Definition of "Defectives" for Presentation

Any sample unit from a sample taken in accordance with an appropriate sampling plan with an AQL 6.5, (see relevant Codex texts on methods of analysis and sampling) shall be regarded as "defective" for the respective characteristics where:

- (a) it exceeds the leaf and head material allowance for "Cut Spears" or "Chopped Styles" in Section 2.4.1;
or
- (b) it fails to meet the length requirements as provided in Section 2.4.1.

2.4.4 Lot Acceptance for Presentation Factors

A lot will be considered acceptable to Presentation factors where the number of defectives as defined in Section 2.4.3 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling).

2.4.5 Standard Sample Size

The standard sample size shall be 300 g.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Optional Ingredients

Salt (Sodium Chloride)

Condiments such as spices and herbs.

3.2 Quality Factors

3.2.1 General Requirements

Quick frozen broccoli shall be:

- of reasonably uniform characteristic colour, taking into consideration any added optional ingredients;
- free from foreign flavour and odour taking into consideration any added optional ingredients;
- clean, free from sand, grit, and other foreign material; and with respect to visual or other defects with a tolerance shall be:
- reasonably free from an excessive amount of leaf material, particularly large coarse leaves;
- practically free from detached fragments and loose leaves (only for spears and florets);
- practically free from extraneous vegetable material;
- reasonably free from yellow or brown coloured florets;
- reasonably free from damage due to mechanical, pathological, or insect injury;
- reasonably free from poorly trimmed units (spears and florets);
- practically free from flowered or poorly developed units;
- practically free from fibrous or woody units.

3.2.2 Definition of Visual Defects

- (a) **Extraneous vegetable material (E.V.M.)**, means leaf, stem, or similar harmless vegetable material other than from the broccoli plant.
- (b) **Detached leaves** (for spears and florets), means broccoli leaves and pieces thereof not attached to a unit.
- (c) **Fragment** (for spears and florets), means pieces less than 20 mm in length for spears and weighing less than 5 grammes for florets.
- (d) **Blemished** - A unit or product affected by discolouration or disease or insect injury.
 - Minor - Slightly affecting the appearance or eating quality.
 - Major - Materially affecting the appearance or eating quality.
 - Serious - Seriously affecting the appearance or objectionably affecting the eating quality to such an extent that customarily it would be discarded under normal culinary preparation.

- (e) **Mechanical Damage** (for spears and florets), means a unit bearing the general configuration of a spear or floret, but from which more than 50 percent of the buds have become detached, or otherwise mechanically damaged so as to materially affect the appearance of the product.
- (f) **Poorly trimmed** (for spears and florets), means units in which the appearance is seriously affected by attached coarse leaves or pieces thereof, or ragged removal of leaves, or small side shoots, or poor cutting of the stem.
- (g) **Overmature or Poorly developed**, means individual buds are in the flowered stage and with respect to spears and florets branching bud clusters which comprise the head are spread so as to seriously affect the appearance of the unit, or the bud clusters are of such advanced maturity that individual buds and supporting stems form loosely structured clusters.
- (h) **Fibrous**, means tough fibre that is normally developed near the outside portion of the broccoli stem; such units are tough but still edible.
- (i) **Woody** means tough fibre that is normally developed near the outside portion of the broccoli stem, such units are extremely tough and highly objectionable.

3.2.3 Standard Sample Size

Spears, florets	- 300 grammes for detached fragments, loose leaves, and E.V.M.; for other defects 25 units
Cut spears and other styles	- 300 grammes
Chopped	- 100 grammes

3.2.4 Tolerance for Visual Defects

For tolerance based on the standard sample sizes indicated in Section 3.2.3, visual defects shall be assigned points in accordance with the appropriate Table in this Section. The maximum number of defects permitted is the Total Allowable Points rating indicated for the respective categories Minor, Major and Serious or the Combined Total of the foregoing categories.

**TABLE 1
SPEARS AND FLORETS**

	Unit of Measurement	Defect Categories			
		Minor	Major	Serious	Total
(a) E.V.M	Each piece		2		
(b) Detached leaves	Each 5 g	1			
(c) Fragments					
- spears	Each 20 mm	1			
- florets	Each 5 g	1			
(d) Blemished	Each unit				
- minor		1			
- major			2		
- serious				4	
(e) Mechanical damage	Each unit		1		
(f) Poorly trimmed	Each unit	1			
(g) Over-mature/poorly developed	Each unit				
(h) Fibrous	Each unit		2		
(i) Woody	Each unit		2		
				4	
TOTAL ALLOWABLE POINTS		25	12	4	25

**TABLE 2
CUT AND CHOPPED STYLES**

	Unit of Measurement	Defect Categories			
		Minor	Major	Serious	Total
(a) E.V.M	Each piece		2		
(b) Blemished					
- minor	Each piece	1			
- major	Each piece		2		
- serious	Each piece			4	
(g) Over-mature/poorly developed	Each 10 g for cut		2		
	Each 2 g for chopped		2		
(h) Fibrous	Each 2 g		2		
(i) Woody	Each 2 g			4	
TOTAL ALLOWABLE POINTS		20	10	4	20

3.3 Definition of "Defectives" for Quality Factors

Any sample unit from a sample taken in accordance with an appropriate sampling plan with an AQL 6.5, (see relevant Codex texts on methods of analysis and sampling) shall be regarded as "defective" for the respective characteristics when:

- (a) it fails to meet any of the general requirements of Section 3.2.1.;
- (b) it exceeds the "maximum total points" in any one or more of the respective defect categories as appropriate for the style (3.2.4).

3.4 Lot Acceptance for Quality Factors

A lot is considered acceptable with respect to Quality Factors when the number of "defectives" as defined in Section 3.3 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling). In applying the acceptance procedure each "defective" (as defined in Sections 3.3 (a) and (b) is treated individually for the respective categories.

4. FOOD ADDITIVES

4.1 None permitted.

4.2 Carry-Over Principle

Section 4.1 of the *General Standard for Food Additives* (CXS 192-1995) shall apply.

5. HYGIENE

5.1 It is recommended that the product covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to this product.

5.2 To the extent possible in Good Manufacturing Practice, the product shall be free from objectionable matter.

5.3 When tested by appropriate methods of sampling and examination, the product:

- shall be free from microorganisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

6. LABELLING

In addition to the requirements of the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985), the following specific provisions apply:

6.1 The Name of the Food

6.1.1 The name of the food as declared on the label should include "broccoli". The words "quick frozen" shall also appear on the label, except that the term "frozen"¹ may be applied in countries where this term is customarily used for describing the product processed in accordance with Section 2.2 of the Standard.

6.1.2 The name of the food shall also include the style as appropriate: "spears", "florets", "cut spears", "chopped" as described in Section 2.4.1.

6.1.3 If the product is presented in accordance with Section 2.4.2 the label shall contain in close proximity to the word "Broccoli" such additional words or phrases that will avoid misleading or confusing the consumer.

6.1.4 When any ingredient other than salt, has been added, which imparts to the food the distinctive flavour of the ingredient, the name of the food shall be accompanied by the term "with x" or "x flavoured" as appropriate.

6.2 Additional Requirements

The packages shall bear clear directions for keeping from the time they are purchased from the retailer to the time of their use, as well as directions for cooking.

6.3 Bulk Packs

In the case of quick frozen broccoli in bulk the information required above must either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "quick frozen" (the term "frozen" may be used in accordance with sub-section 6.1.1 of this Standard) and the name and address of the manufacturer or packer must appear on the container.

¹ "Frozen". This term is used as an alternative to "quick frozen" in some English speaking countries.

7. PACKAGING

Packaging used for quick frozen broccoli shall:

- (a) protect the organoleptic and quality characteristics of the product;
- (b) protect the product from microbiological and other contamination;
- (c) protect the product from dehydration and, where appropriate, leakages as far as technologically practicable; and
- (d) not pass on to the product any odour, taste, colour, or other foreign characteristics, through the processing (where applicable) and distribution of the product up to the time of final sale.

8. METHODS OF ANALYSIS AND SAMPLING

For checking the compliance with this Standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999) relevant to the provisions in this Standard shall be used.